

WEST Search History

DATE: Thursday, May 29, 2003

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<i>DB=USPT,PGPB,JPAB,EPAB; PLUR=YES; OP=ADJ</i>			
L2	L1 and xenon	39	L2
L1	flash fusing and pulse	69	L1

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L2: Entry 7 of 39

File: USPT

May 12, 1992

DOCUMENT-IDENTIFIER: US 5113223 A

**** See image for Certificate of Correction ****TITLE: Printer flash fusing systemBrief Summary Text (2):

The present invention relates to flash fusing assemblies which are used to provide a pulse of radiant energy for fusing a toned or printed image on a recording member. In such an assembly, one or more flash tubes located in a reflective housing assembly are fired to create a short duration intense light pulse, and the housing assembly operates to smooth the spatial distribution of the light while redirecting the light such that most light strikes the recorded image.

Brief Summary Text (8):

In accordance with the present invention a flash fusing assembly includes a flash tube positioned over an exposure window for uniformly exposing and fusing a toned image on a recording member passing by the window.

Drawing Description Text (3):

FIG. 1 shows a prior art flash fusing assembly;

Detailed Description Text (3):

In stage 20, heat is applied to fuse the powder image so that it is "fixed", i.e., bonded permanently to the sheet 5. While the application of heat may be effected by passing the sheet under a quartz heat lamp or between heated rollers, the present invention addresses constructions wherein the fusing energy is delivered as a short flash of illumination directed at the printed sheet. Such a "flash fuser" 20 includes one or more flash tubes 21 positioned by a reflector 22 and aimed at the transport path P of the sheet 5. The flash tube is typically a xenon flash tube which produces a pulse of bluish-white light of short duration, and which transfers its energy primarily to the toner particles to quickly raise their temperature and melt them onto, and wick the melted toner material into, the sheet 5.

Detailed Description Text (4):

The flash tube 21 is connected to a power supply 23 which is essentially an inductor in series with a capacitor bank charged to several hundred volts by a DC charging circuit. Flash tube 21 is triggered by a fifteen to twenty kilovolt trigger pulse from a trigger circuit 24. Several trigger pulses may be provided to fire the flash several times as sheet 5 is transported below the reflector 22, either to fuse successive portions of the image, or to bring the image up to the fusing temperature in several steps. It is understood that within this general architecture other conventional elements may be included, such as a low power heater to precondition the temperature of sheet 5, or a pair of pressure rollers at the output edge to more thoroughly fix the fused toner to the sheet

Detailed Description Text (9):

Applicant has found an effective level of light energy for flash fusing to be approximately one joule per square centimeter, so that assuming that the conversion of electrical energy to light energy has a fifty percent efficiency, and that the reflector has an eighty to ninety-five percent efficiency, the electrical input required to fuse a sheet of paper is slightly over two joules/cm.^{sup.2} on each side of the sheet. Applicant has found that the peak power draw required to fire the flash tubes at a rate that both maintains sheet transport speed and covers the full page varies widely with flash tube spacing and flash timing.

Detailed Description Text (27):

In another embodiment of a specularly reflective flash reflector, the flash units were designed to each cover approximately one quarter of the page dimension along the axis of sheet feed. The two flash units were spaced 300 millimeters apart on centers, such that the first flash was actuated at four equi-spaced intervals to entirely fuse the first side of an A.sub.4 sheet, and the second flash was then actuated to fuse the second side. With this flash spacing and actuation schedule, the sheet was fed through the flash fusing assembly at a uniform rate of speed. Similar efficiencies of energy utilization were noted.

CLAIMS:

8. A flash fusing assembly comprising

a linearly extending housing member having a substantially uniform section at each point along its length determined by walls defining a flash chamber, and a plurality of air conduits parallel to the flash chamber, said flash chamber positioning a flash tube therein over an exposure surface, said plurality of air conduits including a positive pressure air conduit opening above the flash tube and at least one negative pressure air conduit arranged laterally about said flash chamber to centrally direct air at said flash tube and thereafter draw a flow of air downwardly past the tube along a exposure surface to prevent soiling of reflective surfaces while cooling the flash tube.